Example use cases for caArray

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Use Case 1 - caArray as an intermediary between the investigator, a core facility and a biostatistician

Data is often transmitted between a core facility, the lab and the statistician using DVDs or other physical methods. Instead, a local copy of caArray can serve as a data collection and dissemination point.

- The Principal Investigator defines a new experiment in the caArray web interface.
- Laboratory personnel, microarray core facility personnel and scientific collaborators are added to the project.
- The local microarray core facility process Affymetrix microarrays and uploads CEL and CHP files to the experiment.
- A technician enters sample information and associates each sample with its CEL and CHP files.
- A statistician downloads the CEL files and performs a primary analysis in R, beginning with RMA analysis.
- The RMA analyzed primary data matrix is uploaded to the experiment in a tabular (CSV or tab-delimited) format as a single file.
- Data can be further explored by PI or students by downloading the data to geWorkbench.
    - Either the RMA derived data matrix file could be downloaded from caArray and then loaded into geWorkbench, or
    - the original CHP data could be transferred via the caArray API to geWorkbench for further normalization, filtering and analysis.

Use Case 2 - A lab performs a bulk upload of experimental data using the MAGE-TAB method

For labs not wanting to enter data through the web interface to caArray, the spreadsheet format used by the MAGE-TAB method allows easy description of the experiment and data.

- The Principal Investigator defines a new experiment in the caArray web interface.
- Laboratory personnel and scientific collaborators are added to the project.
- The local microarray core facility process Affymetrix microarrays and transmits data to Investigator (file sharing, DVD etc).
- Technician prepares MAGE-TAB spreadsheets in Excel (IDF and SDRF files) with all required experiment descriptions and linkages between samples and resulting array files.
- A complete MAGE-TAB package is created as one or more ZIP file containing the raw data files (CEL and CHP) and the IDF and SDRF files.
- The MAGE-TAB package is uploaded into caArray.
- The uploaded data is imported into caArray.
- Statistician can now download array data files for further analysis if not already done.
- Analysis results (e.g. RMA normalized data matrix) is uploaded to the experiment as an ancillary file.
- As above, further analysis is possible in tools such as geWorkbench.